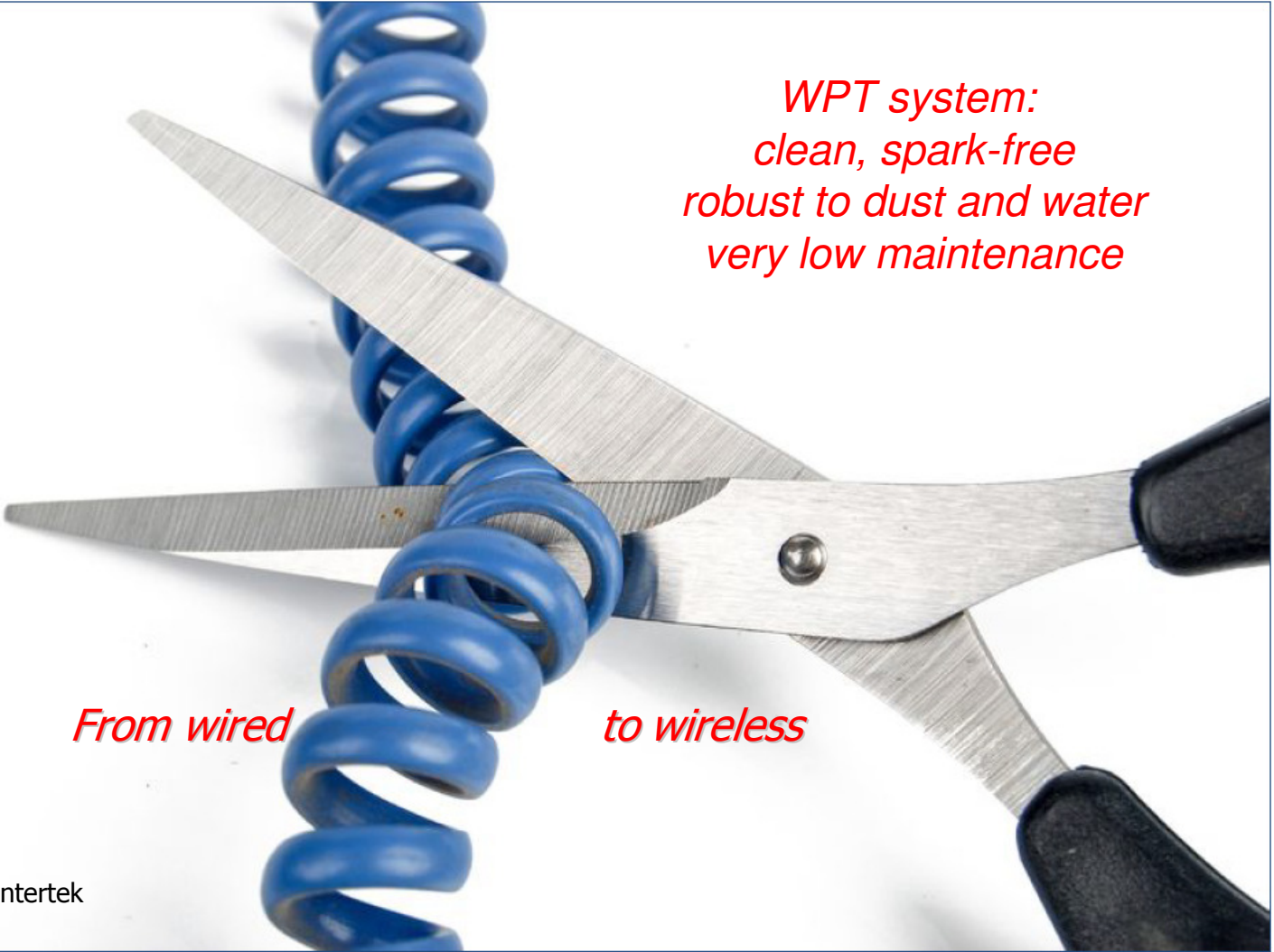


EV 2019 Bucharest 3-4 october

**Launching
of the
Romanian Network
“Wireless Power Transmission”
A Disruptive Technology
*with enormous development potential***

Animal traction → Mechanical traction
Photography on film → Digital photography

Promoter: Andrei Marinescu

A pair of silver scissors with black handles is shown cutting through a blue coiled telephone cord. The scissors are positioned horizontally, with the blades open and the cord passing through the gap. The background is white.

*WPT system:
clean, spark-free
robust to dust and water
very low maintenance*

From wired

to wireless

Source: Intertek

Founding Members

- **ASTR Craiova Branch**
- **ACER (EMC Association), Romania, Prof. Andrei Marinescu**
- **AVER , Romania, Dr. Ing. Mihai Neacsu**
- **INCDIE ICPE-CA București, Dr. Ing. Emil Tudor**
- **Icpe SA Bucuresti, Dr. Ing. Paul Minciunescu**
- **INCD ICSI, Rm Valcea, Prof. Ioan Stefanescu**
- **University of Craiova**

Electrical Engineering Faculty, Prof. Lucian Mandache

Automation Faculty, Prof. Dan Selisteanu

Mechanical Engineering Faculty, Conf. Laurentiu Racila

- **University of Pitesti CCIA, Conf. Dan-Gabriel Marinescu**
- **Terraflux Control Ltd. Iasi, Prof. Octavian Baltag**
- **Politechnica University Bucuresti**

Electrical Engineering Faculty, Prof. Mihai Iordache, Prof. Tiberiu Tudorache

Electronic & Telecommunication Faculty, Conf. Stefan Rosu

- **Technical Military Academy Bucuresti, Conf. Georgiana Rosu**
- **MB Naval Academy Constanta, Prof. Gheorghe Samoilescu**
- **Indaeltrac SRL, Ing. Dan Neagu**
- **Inda SRL, ing. Mihai Radulescu**
- **Nextrom SRL, Ing. Marius Meche**
- **Technical University Cluj-Napoca**

Electrical Engineering Faculty, Prof. Calin Munteanu, Prof. Ioan Vadan

- **Technical University Brasov, Prof. Mihai Cernat**
- **University "1 Decembrie 1918" Alba Iulia, Prof. Adrian Tulbure**

- **Proposed activities (Research and Innovation)**

Layouts, Mechatronics, Circuit Theory & Field Simulation, Coils
Optimization, Loose & Tight Coupling, Interoperability, Micro
& Power Electronics, Environmental and Health Effects, Metamaterials,
Communication and Positioning methods,
Foreign Object Detection
Standardization, Models & Prototypes, Testing & Certification Infrastructure

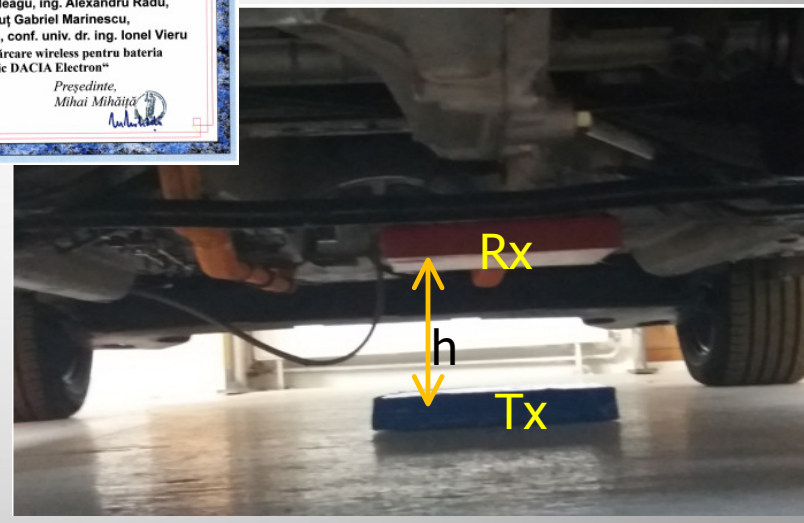
- **Applications**

Light & Heavy Road vehicles, Static/Dynamic transfer, UUVs, AUVs,
Military, Light Urban Vehicle (catenary free), Contact free connectors, Robot
arms, Consumer Applications, Energy Harvesting, Wearables, Biomedical
implants and medical devices.

First Romanian WPT Publication (2018)



The First Romanian Wireless Charger Implementation on the **DACIA Electron** EV



A collaboration ACER & ICMET with IndaEltrac SRL and "Automotive Engineering Research Centre" of the University of Pitesti, Romania.

Important Statements for the next Future e-Mobility Wireless Charging Development (3.7 – 22 kW) – (150 - 300 kW) – (1 MW)

EVs



Buses



**Maglevs
Ferry boats**



“EVs are coming whether You like it or not”

“Driverless technology need wireless charging”

“It is Required for many other Applications”

Low Power Applications (15 – 200 W)

Power tools

Power (charging) 65 W
Voltage (nominal) 10.8-18 V
Current (charging) 3 A
Battery Capacity (total) 2 .. 4 Ah

Garden Tools

Power (charging) 60 W
Voltage (nominal) 18 V
Current (charging) 2.2- 2.3 A
Battery Capacity (total) 12.5 A

Medical work station

Power (charging) 35 W
Voltage (nominal) 16 V
Current (charging) 2.5 A
Battery Capacity (total) 28 Ah

e (Bikes+Scooters)

Power (charging) 180 W
Voltage (nominal) 36 V
Current (charging) 2 / 4 A
Battery Capacity (total) 13 Ah

Laptops

Power (charging) 45 - 65 W
Voltage (nominal) 14.8- 20 V
Current (charging) ~3 A
Battery Capacity (total) ~12 Ah

Tablets

Power (charging) ~ 10-15 W
Voltage (nominal) ~ 5 V
Current (charging) ~ 2-3 A
Battery Capacity (total) ~ 5-10 Ah

WPT Power & Data Connectors

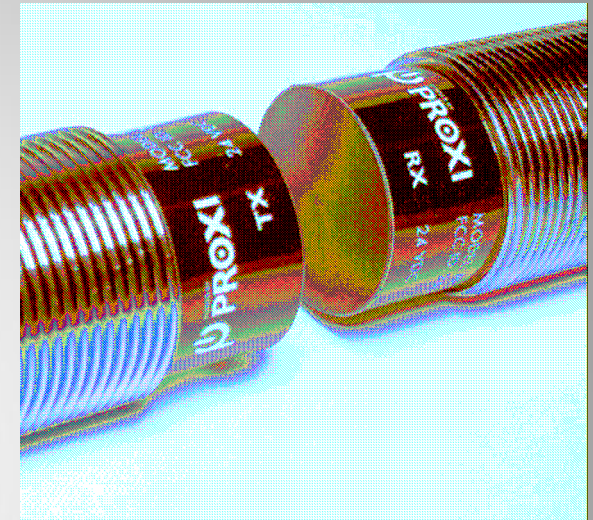
Maintenance-free alternative to traditional cables, connectors, and slip-rings



100 – 250 W
Power dependent
distance 6 – 30 mm



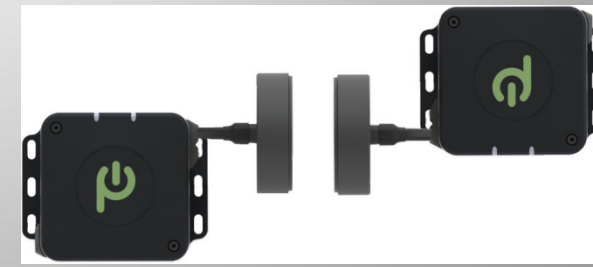
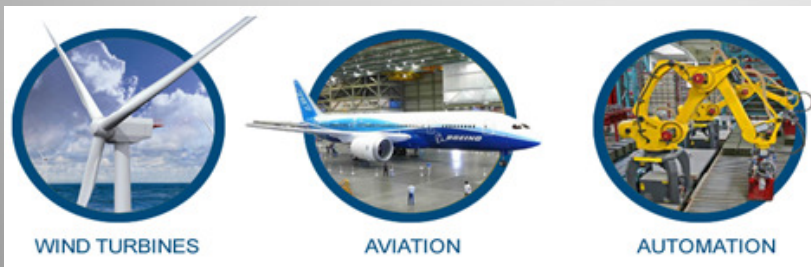
Underwater



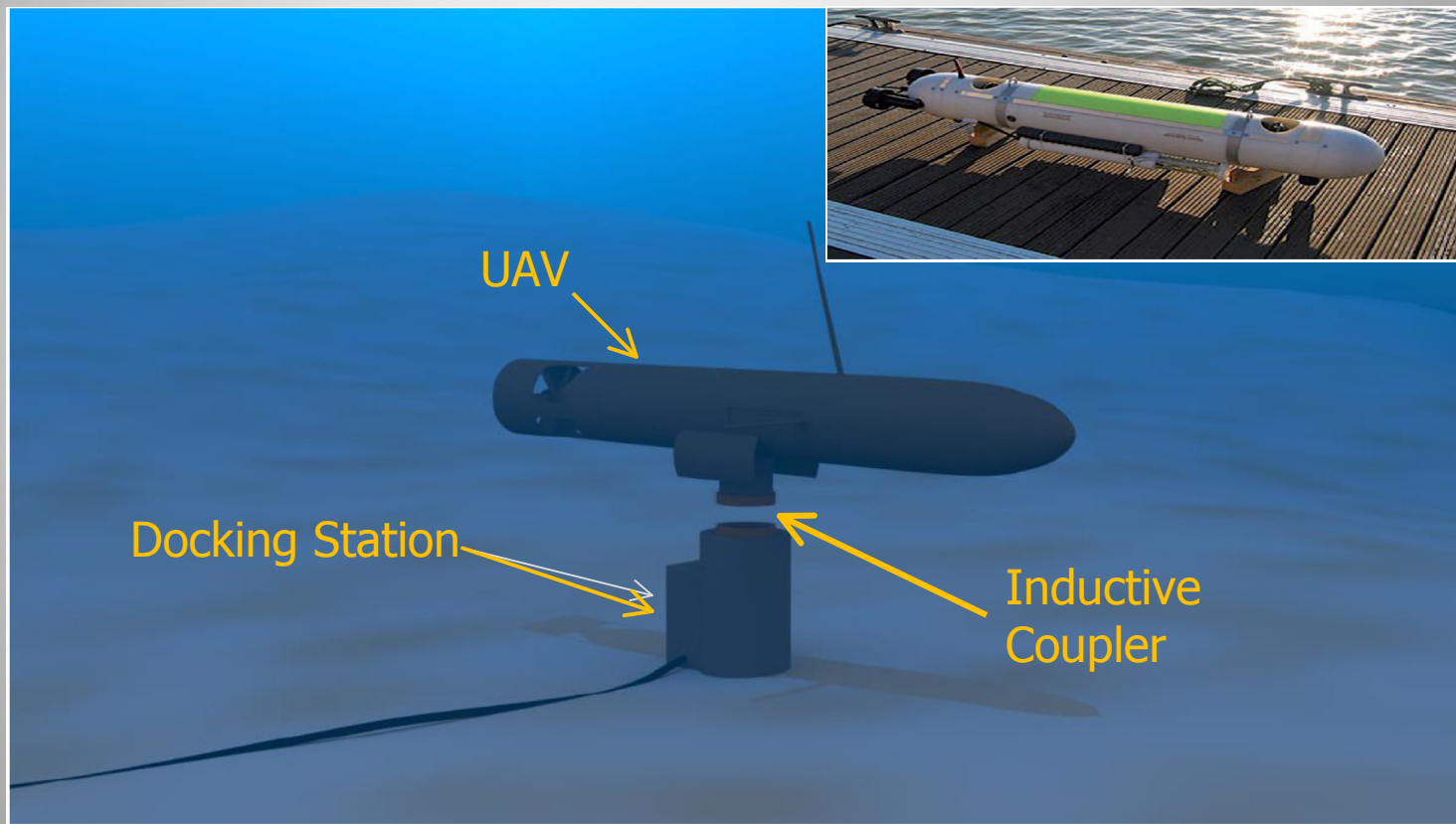
12 – 25 W
Freedom of movement:
(gap, angle, shift, rotation)

Power for electronics through non-electrically conducting surfaces on buildings and in marine appl.

Supported comm protocols : CAN bus, Ethernet & GPIO. RS232/422/48), 4-20mA



WPT Docking System for UAV Battery Recharging (>1 kW)



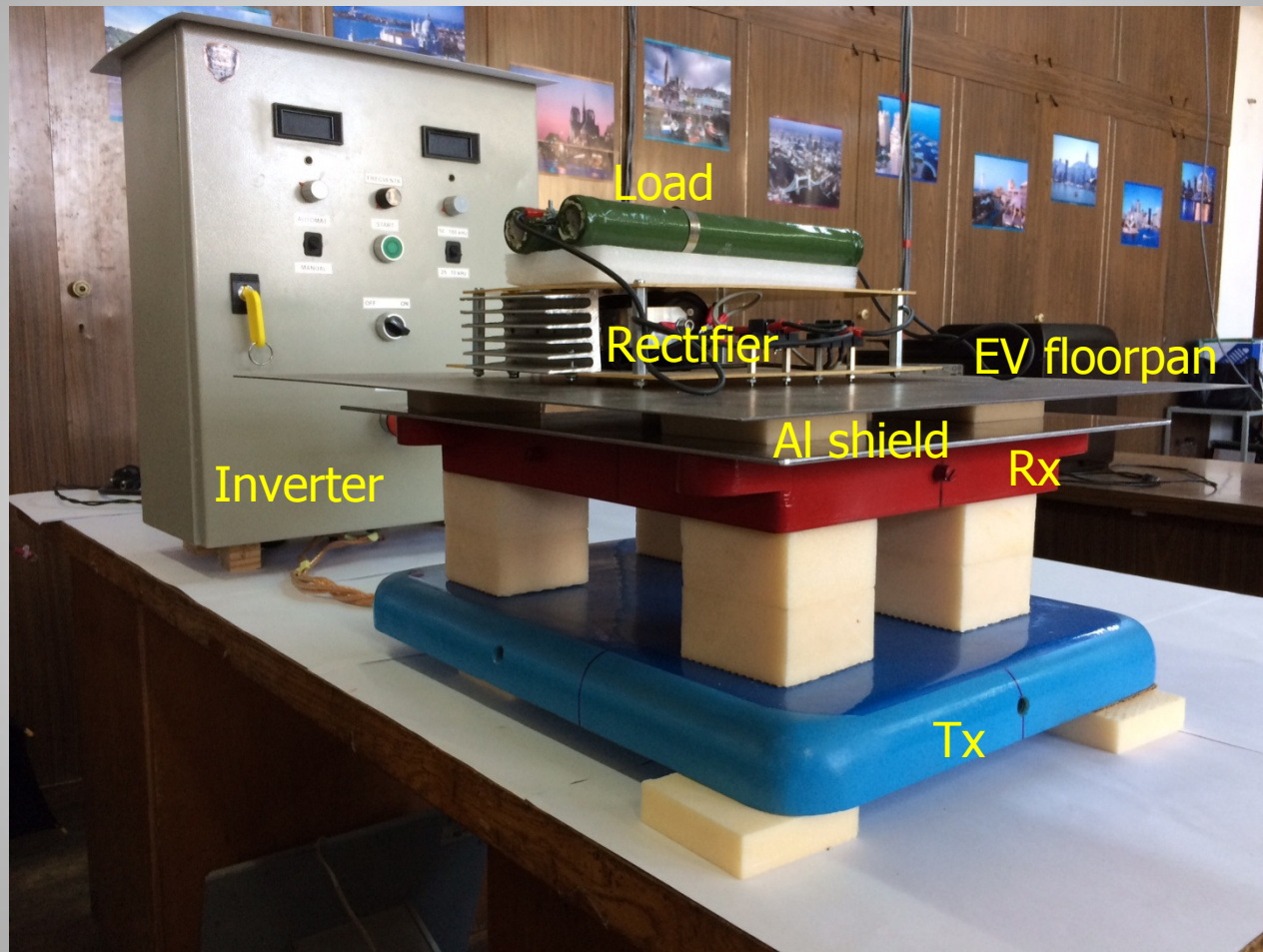
EMF Sources Analysis

Scope: To improve EMI, cost & efficiency

- Primary inverter: conducted/radiated disturbances
- Coupling Coils System: magnetic leakage fields



Shielding against Leakage Magnetic Fields at WPT Systems for EVs



Laboratory Tests

Thank you for your attention!



*From wired to wireless
through
WPT Rom Net*